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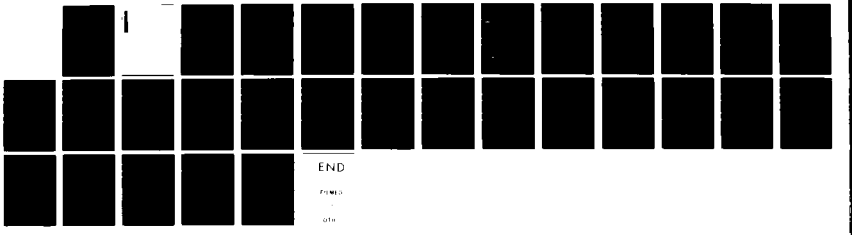

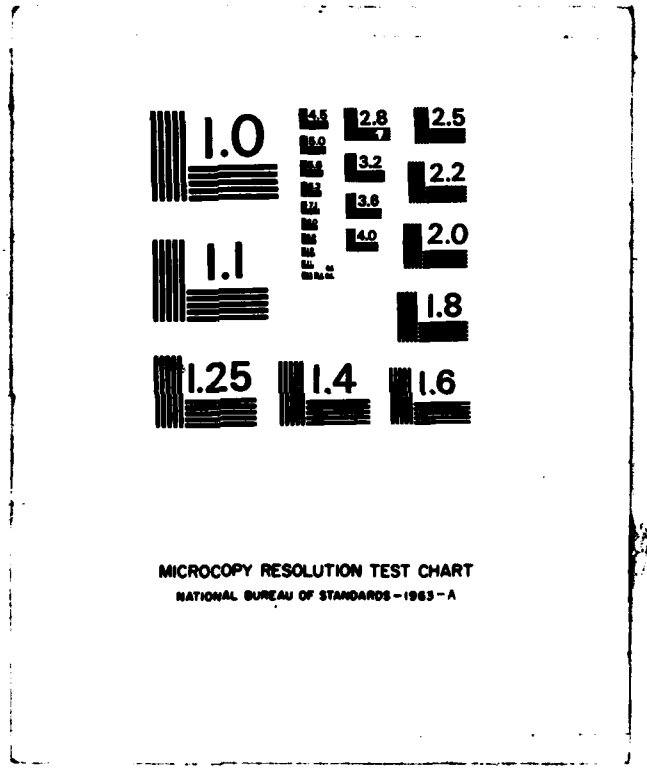
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PERIODIC REPORT 7

COL Thomas R. Stone, Chairman
Charles W. Taylor

1 November 1982

DISCLAIMER

The views, opinions, and/or findings contained in this report are those of the authors and should not be considered as an official Department of the Army position, policy or decision, unless so designated by other official documentation.

FOREWORD

This Periodic Report of the Futures/Long-Range Planning Group of the Strategic Studies Institute contains items addressing the long-range future and their implications for the US Army. Specific subjects considered are: Antarctica, America's aging population, divided societies, American-English, ethnotronics, and long-range planning. An introductory page presents notes prepared by the Chairman, Futures/Long-Range Planning Group.

This report was prepared as a contribution to the field of national security research and study. As such, it does not reflect the official view of the US Army War College, the Department of the Army, or the Department of Defense.

KEITH A. BARLOW
Colonel, Infantry
Director, Strategic Studies Institute

CHAIRMAN'S NOTES

Colonel Thomas R. Stone
Futures/Long-Range Planning Group

The Futures/Long-Range Planning Group has continued to make new contacts with futurists, has conducted futures-oriented meetings, and has consulted with many individuals who work on long-range issues both in and out of government. The Group also is producing a number of futures reports, several of which are being written by members of the Army War College Class of 1982. Working titles and authors are: "Concepts for Army Use of Robotic-Artificial Intelligence in the 21st Century" by LTC(P) Dennis V. Crumley; "Application for and Implications of Computers in the Army in the Year 2000" by LTC Joseph D. Britton; and "Strategic Underpinnings of a Future Force" by COL Joseph E. Felter, Jr.

Reports published by the Futures/Long-Range Planning Group deal with projections which have implications for the US military, especially the Army. These papers are based on the individual author's interpretation. The reports are neither intended to be in-depth studies nor the final word on a particular subject. If the reports stimulate thought, raise questions, provoke alternative points of view, and perhaps become forerunners to more detailed studies, then they will have served their purpose. The Futures/Long-Range Planning Group invites comments on all of its publications. We also encourage readers to suggest topics they would like the Group to consider or to submit drafts of or concepts for papers they would like to write.

REVIEW OF THE LITERATURE

The Antarctic Club: Future Military Implications.[1] Antarctica, long considered useful as an area for scientific research and environmental study, is almost certain to be an arena of international controversy during the next two decades. This last earthly frontier has taken on the geostrategic dimension of a continent ripe for future exploitation of valuable resources. More than 200 million years ago, Antarctica was part of a landmass we now call Pangaea,[2] which had led to speculation by scientists that the rich resources found on other continents will also be discovered around the South Pole.

Since Antarctica was first sighted in 1820, a number of nations have shown interest by conducting research expeditions, then later, by establishing research stations. Between 1908 and 1946, formal territorial claims were made by seven nations: Argentina, Chile, Australia, France, New Zealand, Norway, and the United Kingdom (UK) on the basis of contiguity, discovery, occupation, or inheritance. The claims of five of these nations are mutually accepted, i.e., those of Australia, France, New Zealand, Norway, and the UK. The sovereignty claims of Australia, Chile, and the UK overlap, and, while not in dispute today, could very well be a serious source of contention in the future. (See map.) Although the United States and the Soviet Union have

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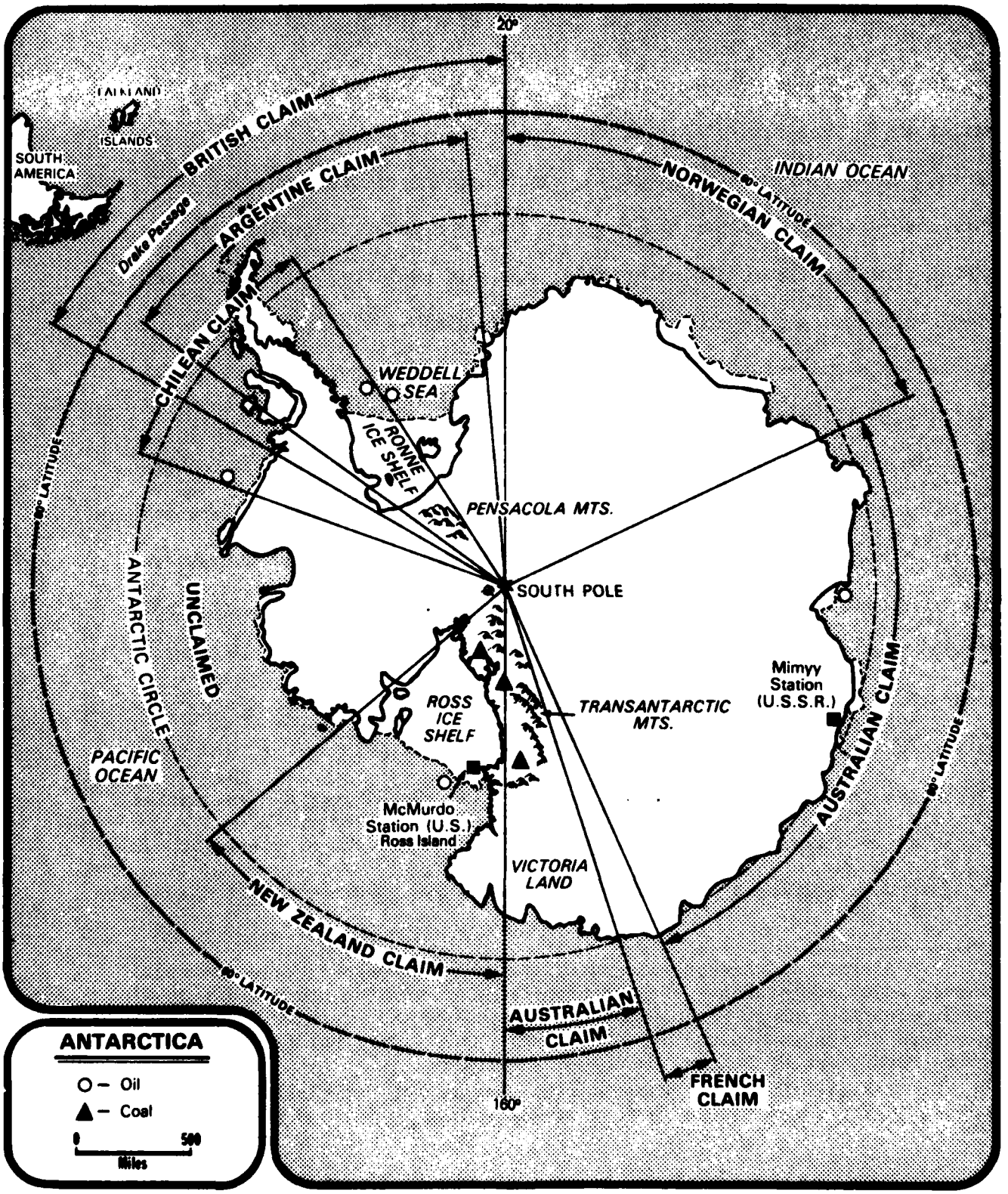
1. A draft of this article was prepared by Rebecca Pike, a political science major and graduate of Dickinson College, while a student intern with the Futures/Long-Range Planning Group. The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of Defense or the US Government.

2. Pangaea (Greek for whole earth), before the world's continents drafted apart, was attached to Africa, Australia, India, and South America.

TERRITORIAL CLAIMS IN ANTARCTICA



established scientific research stations in Antarctica they are nonclaimants, do not recognize the claims of the other nations, and reserve the right to make future claims based on geographic and other scientific discoveries. By 1959, Belgium, Japan, and South Africa also voiced interest in the area and agreed to participate with the other nine nations in joint and cooperative research programs. This directly led to the drafting of the Antarctic Treaty which became operative in 1961 with the twelve nations mentioned above as signatories. The Treaty, since joined by West Germany and Poland, makes no provision for the delicate issue of claims resolution.

The Antarctic Treaty guarantees the freedom for all signatory nations to travel throughout the region and inspect all stations posted there (currently 45), with free access given to any nation willing to sponsor an expedition to further the development of global science. The use of nuclear devices or weapons for local testing or the disposal of nuclear wastes are prohibited by the Treaty as are military activities on all land and ice shelves south of 60 degrees South Latitude. Military personnel and equipment, however, are allowed for scientific research or for peaceful purposes, such as atmospheric pollution and weather surveys or human behavioral studies. Every two years, signatory representatives meet to discuss cooperative plans and activities (the most recent meeting was June 1981 in Buenos Aires).[3] Politically, Antarctica has been an anomaly in the area of global cooperation because it signifies an extraordinarily successful attempt by the international community to share the accumulated knowledge of scientific discovery.

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3. Peter J. Anderson, "How the South Was Won," Wilson Quarterly, Vol. 5, No. 4, August 1981, p. 73.

The world community has benefited from this practical implementation of cooperative rather than competitive goals. Any United Nations (UN) member state or other invited state who is in agreement with peaceful aims of the Treaty may accede to the Treaty with the consent of all other members.[4]

Currently, US research and military support operations constitute a year-round program funded, in part, and managed by the National Science Foundation (NSF).[5] The Foundation's efforts represent a principal expression of the US national policy of promoting the scientific goals of the Treaty. Logistical support from the US military (Navy) is necessary to support scientific activity. Four stations are maintained by the United States, with a central depot for operations at McMurdo Sound on Ross Island. These supply the majority of support personnel for US scientific teams.

Potentially rich sources of food and energy have piqued the interest of many nations. Food was addressed in a 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). While the Treaty Parties, including the United States, are in agreement in their desire to develop a management mechanism for exploration and exploitation of mineral and other nonliving resources in Antarctica, these resources are increasingly attracting the attention of commercial developments. Minerals, such as coal and copper, lead, and iron ores are believed to lie in the Transantarctic Mountains. Additionally, Gulf Oil Corporation has estimated that there may be as much

4. "The Antarctica Treaty," United States Treaties and Other International Agreements, Vol. 12, Pt. 1, 1961, p. 800.

5. The cost of the US Navy logistical support in FY 81 amounted to $55.9 million, $8.8 million of the NSF total budget went to Antarctic research. (Frederick Golden, "Scramble on the Polar Ice," Time, Vol. 119, No. 8, February 22, 1982, p. 65.)

as 50 billion barrels of oil under the ice-covered Weddell and Ross areas.[6] Once substantial deposits of minerals and especially oil are proven, agreement over cooperative use of the region may be more difficult to achieve and exploitation may be unrestrained.[7] As long as the Treaty is in effect, US scientific and military presence, politically and symbolically, serves to dampen international tensions associated with exploitation and the claims issue.

The US military presence in Antarctica helps passively by assuring adherence to the Antarctic Treaty's provisions; is respected widely by other signatory nations; and plays an important role, as have American scientists, in promoting international scientific cooperation and free exchange of information. American and Soviet scientists, reciprocally, participate in each other's programs, despite differences in Soviet-American relations elsewhere.

Currently, the US Navy operates six ski-equipped Hercules C-130 planes (owned by the NSF) and provides up to 1200 hours annually of Navy helicopter support.[8] Although such support, which the scientific community has come to depend upon, is an extension of the Navy's mission, the Navy is best suited to provide the type of support requirements needed. US military benefits accrued from this support provide an accumulation of essential military data related to worldwide weather patterns and to cold-weather operations, for example, as well as data concerning human behavior in isolation. As the Treaty draws toward the close of its first 30 years in 1991, it is likely that the US

6. Golden, "Scramble," p. 64. Also in Barbara Mitchell, "The Politics of Antarctica," Environment, Vol. 22, No. 1, Jan/Feb 1980, p. 13.

7. Without international cooperation, it is likely that competition for exploratory rights could become so fierce by the year 2000 that regulation of the oil industries would be virtually impossible.

8. Robert Reinhold, "As Others Seek to Exploit Antarctica, U. S. Takes the Scientific Approach," The New York Times, December 21, 1981, p. D13.

strategic and diplomatic position could be strengthened by continued US military presence. If issues of territoriality, jurisdictional rights, and environmental problems are not resolved, the Antarctic Treaty may eventually disband. It is likely that increased US military presence, e.g., an Army research team at the Pole, may be needed in Antarctica.

The United States is not alone in its interests to maintain the provisions of the Antarctic Treaty. The Soviet Union has eight all-year scientific stations strategically scattered around the continent and has supported the United States in retaining a cooperative flow of information. Soviet interests in Antarctic resources, however, increasingly are expanding and currently some Western countries suspect that the Soviet Union is trying to become the dominant political power in the Antarctica.[9] Additionally, Brazil, China, Peru, Taiwan, and Uruguay also are beginning to show an interest in the economic potentials of the region.[10]

Some projected situations that could come about in 1991 or earlier which may involve the US Army in a role as an instrument of US strategic interests are:

o The Treaty is continued under its present terms and, with agreement of other member nations, the United States establishes a joint civilian scientist/Army research team at the South Pole and the Soviet Union establishes a mobile military research team which conducts exploration at its scattered stations;

o The Treaty is continued under its present terms but one or two of its members covertly introduce armed forces into their claimed areas to demonstrate their sovereignty and protect their land from foreign exploitation, thereby violating the Treaty's terms. A UN peacekeeping force, including a US Army contingent, is created to reestablish the status quo;

o The Treaty is continued but Argentina withdraws to protect its claim which overlaps that of Britain and Chile, and attempts to prevent intrusion by defending the Drake Passage.[11] A UN peacekeeping force, including a US Army contingent, is created to prevent Argentine land forces from seizing British and Chilian land claims;

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9. Reinhold, "Antarctic Explorers Shift Goal to Hidden Resources," The New York Times, December 20, 1981, p. A1.
10. Ibid.
11. Edward K. Mann, National Security Policy for the Antarctica, Research Study, US Air Force, Command and Staff College, May 1984, p. 63.

o The Treaty is not continued, commercial exploitation is widespread, and military forces of former Treaty members and non-Treaty members stake claims and defend them throughout the Antarctic continent. The United States deploys an Army contingent to defend and protect its South Pole scientific station;

o The Treaty is abrogated by Argentina which, perceiving threats of overthrow and attempting to retain prestige and power, sends a military contingent to its Antarctic claim and proclaims its sovereignty over the territory, including that claimed by Britain and Chile. A UN resolution to negotiate sovereignty claims is reached and a UN peacekeeping force, including a US Army contingent, is dispatched to the disputed area.

Strategically the Antarctic region is important to the United States. Unlike the Arctic waters, Antarctic sea routes are open the year round. The Drake Passage, for example, would take on special signficance in the event of a denial of use or the destruction of the Panama Canal. The passage around the Cape of Good Hope between the Antarctica and the tip of Africa, in a like manner, could serve as alternate to the Suez Canal. Moreover, the scientific data provided from Antarctica is important to US industries as well as to the military. The possibility of oil and other resources being discovered there makes Antarctica increasingly valuable. The importance of the continuation of the Treaty in this respect is significant.

Although one can only speculate as to Antarctica being a conflict area, the potentials are such that the US Army must consider its role and capabilities to survive and fight there if called upon. The Army planners should consider the procurement of durable combat systems and equipment which effectively can operate under cold weather conditions where temperatures often reach minus 75 degrees Fahrenheit. Planners also should consider the training requirements for combat forces as well as the operational doctrine

for an Army contingent to fight effectively in the Antarctic environment where, in addition to the adverse weather, may involve lengthy night operations. However low the probability of conflict in the Antarctica, the development of an Army capability to project and sustain small units in that rugged environment would appear prudent.

The Impact of an Aging Population on the Future Army. "Whatever the uncertainties in other areas, the number of older people in the United States can be reasonably projected for the next 50 years because projections depend on death rates and not on birth rates."[12] Increasingly, US society will be dominated by an aging or adult-centered population mainly established by those born during the post-World War II baby-boom period which ended in 1965. Within the expected range of fertility rates in the 1980's and 1990's, ours will be an aging society with an average age approaching 35 by the year 2000 as compared to about age 30 today. As the baby-boom generation grows older in a period of lower birth rates, the average age can be expected to continue to rise sharply. Army planners must ponder the consequences of an aging society and make plans for the most effective employment of the older soldier.

If death rates remain approximately the same as in 1980, the number of people over 65 will increase from the present 25 million to nearly 45 million by 2020.[13] The proportion over 65 in the US population today is about 11 percent; it is expected to be about 12 to 13 percent by 2000[14] and estimated

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12. Bernice L. Neugarten, "Growing Old in 2020: How Will It Be Different," National Forum, Vol. 61, No. 3, Summer 1981, p. 28.
13. Ibid.
14. Another forecast predicts 20 percent by 2000. See John A. Jenkins, Creating the Future: Corporate Strategists Shape the 21st Century, Washington: The Bureau of National Affairs, 1979, p. 11.

to be from 16 to 20 percent by 2020.[15] This aging population increasingly will affect every aspect of the socioeconomic/political segments of the American society. Disparities between the number of older persons and the number of younger persons available and eligible for military service will affect how the US Army is manned, what its personnel, training, and health programs will be and how the Army will fight.

Past social and medical experience has demonstrated an increase in longevity of American people as well as general improvements in health due to efforts to conquer disease and disability. Possible future discoveries of the genetic and biochemical secrets of aging could further increase life expectancy. Additionally, continuing advances in physical and psychological medicine, in all likelihood, will tend to improve general well-being, thereby increasing stamina, disease resistance, and mental vigor of aging individuals. Future Army health care delivery should accommodate the management of appropriate programs for older soldiers while providing for younger soldiers whose accessions would be dwindling. Projected demographic estimates have indicated that there will be fewer eligible individuals to draw from, with a disproportion of youth to older persons available to serve.

In response to the decreasing availability of eligible youth over the next few decades, the Army may have to lengthen service terms and discontinue mandatory retirement in order to retain selected officers, NCO's, and enlisted persons. The advantages to the Army (of retaining older soldiers) may include the continued availability of wisdom, knowledge, and experience as

15. Neugarten, p. 29.

as well as reducing accession requirements. As changes in the age distribution become more pronounced, the US society in general as well as the Army may increase recognition of older persons as a valuable resource to the country. Special efforts (such as pay and training) will likely be made to encourage their continued service.[16] Army training and education may include special and separate programs for older individuals to keep them abreast of changing aspects of warfare; e.g., technology-intensive combat. New and special advancement grades could be made available to provide appropriate positions of prestige in management and leadership for the older soldier. This would likely increase incentive, initiative, and performance and nullify the normal conservative attitudes of older persons. The possibility of the Army's transition from traditional combat operations to more technology-intensive combat operations over the next two decades will offer new opportunities where older soldiers can be of special worth. Assigned to positions of responsibility, their experience and expertise in traditional battle tactics and strategies can provide the Army special insight for the effective combat use of new technological systems.

Divided Societies--A Future Role for the US Army? Within almost every nation of the world there exist various dichotomies which separate one group of citizens from another. Such divisions are usually deeply imbedded within the society, some coexisting peacefully and others tending to be constant sources of discontent, occasionally leading to social unrest and civil

16. Retaining the older soldier in active service would also contribute toward alleviating conflicts in the general society between the decreasing number of younger workers who must support the growing number of retirees and the older population.

disobedience. Under more trying situations, societal divisions lead to the overthrow of governments and to rebellions. Over the next two decades, most nations will continue to modernize, industrialize, and, in general, take advantage of technologies that will increasingly bring greater interdependence among the nations of the world. It is this interdependence, the interinvolvement of nations, that will make the internal societal divisions within nations more prominent. Leaders will be challenged to find means to resolve such divisions through arbitration, choosing sides, applying military force, or other means.

Schisms have been present in societies for as long as there have been nations. They have occurred in free, democratic societies as well as in totalitarian or authoritarian societies. Such societal clashes, generally, have involved domestic police, at a minimum, or local military forces but also on occasion have involved external military forces of "protector" and aligned nations or peacekeeping forces of the United Nations (UN). The US Army (often, as Federalized State Militia) has been called upon in the past to manage societal differences within the United States proper, e.g., the Whiskey (tax) Rebellion, the Civil War, labor-management disputes, and racial disturbances. The US Army (alone or as part of a joint task force) has been used also outside of the United States in situations (not involving other external forces) related to societal differences, e.g., the Mexican bandit pursuits, the Dominican Republic intervention, and the Panamanian riots. It is not without precedence to believe that the US Army might be called upon again in the future to settle disputes involving societal divisions.

Some of the basic national societal divisions are:

- o educated and illiterate;
- o ideological believers and disbelievers;
- o religious and nonreligious;
- o landowners and nonlandowners;
- o industrialists and agrarians;
- o rich and poor;
- o politically free and politically not free.

These divisions may give rise to serious, disruptive disputes within a nation but other conditions such as direct or indirect foreign exploitation may also contribute to disharmony. Robert Darius addresses India being an example of a society where one group is educated, productive, and industrial and the other is illiterate, poor, and tradition-bound.[17]

There are no long-term trends that suggest these divisions will not exist in the 21st century. Basic among these contrasts is the socioeconomic division of the rich and the poor or the "haves and the have-nots." This division is an integral part of the North-South equation and is an important factor involved in the extension of social equality and human rights within some societies. Similar situations involving socioeconomic divisions in Africa and Latin American are likely to continue over the next two decades. The question of US involvement within any countries in these regions is one which is better resolved by diplomacy than military action. Once a decision to help, even on a relatively small scale, is made, the US Army can become involved through Military Assistance Programs creating a requirement

17. Robert G. Darius, unpublished paper, The "Two Indias" in South Asia in the 1990's, 1981, p. 1.

for Foreign Area Officers. There are currently no trends which suggest that the use of the Army in this manner will change in the future.

The Future of American-English and the US Army.[18] Change is the natural state of any language. Changes occur unintentionally as well as intentionally as new words and expressions come into style. Generally, the changes that become permanent tend to be those that make communication faster, simpler, and more effective for large numbers of people. The English language, on which American-English is based, has been growing and changing for hundreds of years until now more than 300 million people consider English their native language and millions more speak or write it as a second language. Changes in American-English over the next two decades will likely affect communication in Army leadership, management, and operations as new words and phrases come into being, largely as a result of ethnic influence and the impact of technology.

Within the American-English language, over 100 new words and phrases have been adopted in general usage between 1979 and 1982. (For example: synfuel, boat people, hesiflation, palimony, and ethnotronics.) These words and phrases came from a variety of fields such as science, politics, economics, law, and education. Specialized groups within these fields, e.g., occupations and professions, coin new words which often spread quickly and fall into general usage, such as gasohol, Abscam, glutflation, and smokeout. The influence of television has been no less than spectacular in exposing the general public to more specific areas of science and technology such as

18. Adapted in part from Lane Jennings, "Brave New Words: Alternative Futures for the English Language," The Futurist, Vol. 15, No. 3, June 1981, pp. 7-15.

holistic health, genetic engineering, and computer sciences, each of which are generating new words and terms. The fields of international relations, national defense, the military, and communications, for example, have additionally contributed their share of new words which often are derived from acronyms or from the projects they represent such as SALT, START, MX, VOLAR, LASER, dewline, SAM, Roger, and others. Regular users within specialized groups and fields have traditionally adopted distinctive jargons that are used in face-to-face conversations as well as in written communications.

In addition to the causes of language change mentioned above, ethnic influences within a society play a major role in shaping language. The increasing number of non-English speaking immigrants to the United States is another souce of language change which will have a continuing affect on the development of future American-English. Foreign words and pronunciations, originating from non-English speaking groups, will meld with American-English and create new hybrid words and will influence how the society, including the Army, will communicate. For example, provisional census counts show that there are 25 US cities today with Hispanic populations of 50,000 or more.[19] Segments of these cities are almost exclusively Spanish-speaking populations.

Many Hispanic young men and women will be enlisting in the US Army over the next two decades. For most, language will be a barrier to success. For others, who have learned American-English, opportunities for advancement will acrue. The tenacity of foreign groups to retain cultural identity, including speaking and writing their native language, may create additional problems.

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19. The leading cities are New York with almost 1.5 million; Los Angeles, 0.8 million; Chicago, 0.4 million, and eight cities in Texas ranging from 0.06 million in Austin to over 0.4 million in San Antonio.

Lane Jennings anticipates that cable television systems, prerecorded videotapes and videodiscs will be oriented selectively and exclusively to each language and ethnic group, dividing the mass television audience, accentuating existing dialect (and language) differences, and eroding accepted national standards of American-English which have been established and reinforced by the mass media.[20] Such developments over the next decades will likely be divisive to the American society in general. The effect could be lessened, however, as many Hispanics may find cable TV and videotapes beyond their means and may depend on public media and education to provide instruction in Spanish and in American-English.

Some states, particularly California[21] and Texas, currently provide public bilingual educational programs, although such education is not required by Federal law. Public education trends, for the most part, indicate the retention of American-English as the national language taught. These trends also indicate that public education probably will acquiesce to the pressures of expanding non-American-English speaking minority groups and will continue with some form of bilingual programs. By the turn of the century, however, many second generation Hispanic-Americans very likely will continue to be bilingual in their homes only, and third generation in the following decades most likely will speak American-English exclusively.[22]

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20. Jennings, p. 8.

21. California also has bilingual educational programs in Chinese, Filipino, Japanese, Korean, and Indochinese languages.

22. Such has been the language characteristics, historically, of Italian-, Polish-, German-, Irish-, Chinese-, and Japanese-Americans. It must be kept in mind, however, that these ethnic groups did not have exposure to liberal judicial interpretations of the Constitution or legislation which protected their rights as US citizens and which now is being extended to refugees and legal and illegal aliens as well.

If the US Army were to establish bilingual training programs for Hispanic-Americans, it would require duplication of communication media, such as training manuals, materiel-handling instructions, maps, and so forth. Separate Army units of non-American-English speaking/writing would support segregation (a practice abandoned by the Army in the late 1940's), would create divisiveness throughout the Army, and would complicate operations during wartime. It would be to the advantage of the Army, in general, to require all troops to speak, read, write, and understand American-English at an approved standard and to continue the current integration policy. On a more selective basis, there is a growing need for Army attachés and small in-country units or cells of language/culture specialists of either active Army or Reserve officers, as part of country teams in Latin America, South and Southeast Asia, and Africa.

Over the next two decades, Army training programs will be faced with still another language problem: the need to accommodate enlistees who use American-English differently than the language used in Army training materials. Enlistees will sepak a vernacular styled from computer, space, and communications occupations. Commanders and NCO's will need advice and training in the language they must use to communicate effectively with their troops. The increasing use of computers by the Army during the next two decades may reduce the problem considerably since computer language (BASIC, Pascal, etc.) may be standardized for all users. Well into the 21st century, computer logic may influence the development of languages. "Conceivably, it could lead to the creation of an artificial, culturally

unbiased [language] . . . adaptable to pen and computer console,"[23] and one that is universally understood.

In the longer-range future, language change may be brought about by computer-microprocessor language translators which may be able to translate one nation's language into that of another progressing toward a common world language. These future generation translators, also, may be able to translate voice messages from one language to another, thereby permitting more effective communication between unified friendly forces as well as improving international peacekeeping between heads of state.

Ethnotronics and the Army of the Future. Ethnotronics is the use of electronic appliances, principally microprocessors, as people amplifiers. Such appliances are designed to assist the human capacity for "accessing and applying information for real-time informing, learning, reasoning, problem solving, decisioning [sic], and communicating."[24] This article considers a broad application of ethnotronics as it might be used to its best advantage by the Army of the future. Advances in cybernetic technology are shaping the society in which people will live in the next century.[25] Such advances, likewise, may also contribute toward shaping the leadership, management, and operations of the future Army.

During the 1980's and the 1990's, the American society can look forward to the combination of computer intelligence (information, data, and knowledge)

23. Ralph E. Hamil, "One World, One Language," The Futurist, Vol. 15, No. 3, June 1981, p. 18.
24. Earl C. Joseph, "Future People Amplifiers: Emerging Ethnocentric Systems," Futurics, Vol. 4, Nos. 3/4, 1981, p. 193.
25. Ibid, p. 194.

with communication capabilities which will provide many citizens reciprocal communication exchange with ethnotronic appliances. Such appliances will be able to converse directly with people, often beginning the conversation, as well as "talk" with (actuate) other ethnotronic devices. The addition of microprocessors to computers will expand the utility of ethnotronic machines. Over the next two decades, some of the applications likely to be developed will include: sensor, actuator, voice-recognition, collision-avoidance, teaching and school, hospital and patient, factory, and office. The ethnotronic office of the future, for example, will include "intelligent typewriters, electronic and paperless; smart sales and accounting machines" which will steadily increase office worker production.[26] The possibilities of ethnotronic applications for expanding the human capacity appear to be endless.

Isaac Asimov describes additional applications for this man-machine interface for 21st century travelers.[27] In a cashless, checkless society, Asimov envisages that travelers will have plastic devices (similar to magnetic credit card design) for personal identification (possibly, combining voice recognition with numbers) which will activate ethnotronic machines for credit verification, room entry (replacing keys), global message/communication network arrangements (via satellite), robotic hotel room-services, as well as other creature accommodations. Advancements in ethnotronic technology (e.g., from silicon chips to wafers, from use of only a fraction of a chip to use of a total silicon wafer, and from high-speed integrated circuits

26. Ibid., p. 197-198.
27. Isaac Asimov, "Checking in at Tomorrow's Hotel," Signature, Vol. 16, Issue 11, November 1981, p. 54.

to very high speed integrated circuits on near-microscopic wafers) will broaden the application of ethnotronic machines to almost every walk of life. Such machines will be especially useful to the Army for a variety of purposes.

Ethnotronic systems and machines can provide the Army numerous advantages which will not only be cost-effective but may also serve as force multipliers (particularly, as available manpower draws down over the next 20 years). Some examples of ethnotronic systems which may be commonplace in the Army at the turn of the century may include:

o a hand-portable, medical diagnostic laboratory unit that can complete annual physicals in minutes, diagnose illnesses and anomalies, and prescribe precise/individualized medications;

o a briefcase-sized unit administrative and personnel package which contains complete records of all unit members and can process personnel actions within minutes, including, for example, individualized financial transactions such as money deposits in CONUS-based banks from overseas locations;

o a suitcase-sized man-portable package which can accommodate situation (war) rooms, provide large-screen video displays,[28] and secure audio-video teleconferencing systems from geographically and chronologically dispersed unit commanders;[29]

o a pocket-sized micrographic/microprocessor unit that can receive orbiting satellite earth images and convert them to usable data or, by secondary process, convert them to large-screen video display or hard-copy photographs; and

o matchbox-sized, secure audio-video teleconferencing device for dispersed field unit personnel use.

What appears to some observers today to be electronic gadgetry, games, and a waste of tax dollars that could be better spent on traditional and time-tested equipment is the forerunner of the way the American society very

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28. Adapted from Edward Cornish, ed., Communications Tomorrow: The Coming of the Information Society, World Future Society, 1982, p. 6.

29. Ibid.; Adapted from "The Future of Computer Conferencing, An Interview with Murray Turnoff," p. 132.

likely may be in the 21st century. The European Soviet society is also moving in this direction as are Soviet forces--partly, the result of legal and illegal acquisition of American high technology. Some of the "high tech" gadgetry on today's market or in blueprint is, in fact, useless to the Army. There is, however, a constant need for the Army to invest in limited or test quantities of high-tech advanced items for evaluation in field testing (as is done at the Army's High-Tech Test Bed at Fort Lewis). The Army today must innovatively determine the special needs of the future Army so that high-tech advanced items can be tested, refined and procured in a timely manner.

Long-Range Policy Planning.[30] Four years ago Lincoln Bloomfield[31] wrote a critique of long-range planning in the State Department recommending improvements. Bloomfield credits American military planners with greater progress in the field compared to their foreign policy counterparts. Nevertheless, his review is valuable for the Army to the extent that it may enable recognition of successes and failures in grappling with and shaping what is to come.

Bloomfield begins his review with State's Policy Planning Staff, established in 1927 to perform four main functions:

- o to formulate long-range programs for the achievement of US foreign policy objectives;
- o to anticipate problems for the Department of State;
- o to study and report on broad politico-military problems;

30. This article was provided by John F. Scott, Economist and Member of the Futures/Long-Range Planning Group.

31. "Planning Foreign Policy: Can It Be Done?" Political Science Quarterly, Fall 1978, pp. 369-391.

o to evaluate and advise on the adequacy of current problems.

After periods of operation in the fifties, which Bloomfield praises, planning through these four functions fell on hard times and wasn't revived until Henry Kissinger became Secretary of State. But by then bureaucratic "arthritis" may have become too advanced to recover the flexibility necessary for a dynamic operation. One of the reasons for Bloomfield's diagnosis is "The vision of foot-on-the-desk, long-range thinking [had] yielded, as it had before, to participation in the urgent policy questions coming before an activist president."[32] The long-range became six months from now.

Pausing in the mid-seventies, Bloomfield draws some wry conclusions: successful planners are those considered most "relevant" by their bosses: whether planning ever is judged to do what it's supposed to do is entirely up to the boss; to be "relevant" (and therefore influential) planners cannot, and will not, get too far out of line with established policies and programs.

Turning to foreign experiences, Bloomfield cites Britain's foreign policy planning staff (circa, late fifties and early sixties) which was charged not to make plans but to "foresee choices Britain might face over a five-year stretch, and to formulate broad lines of policy." Also, under Prime Minister Heath, a staff of 24 was set up that came close to realizing "the ideal model of a planning staff, complete with unorthodoxy (even heresy), continuous tension with the bureaucracy, and strong in-house challenges to policy." The chief of the group required his planners to review in writing what the government said it would do, what in fact it did, what it did not do, and what to do about it. At the end, however, Bloomfield, after touring

32. Ibid.

British, French, Dutch, German, and Soviet policy planning, found that ineffectiveness in the bureaucratic mold is a universal condition: policy-makers are busy and focus on short-term problems; long-range planners are supposed to focus elsewhere but become caught in the rush of current problems.

Bloomfield excuses no one, however. Today, when "uncertainty and complexity have multiplied beyond recognition," the case for planning is more compelling than it was when the world was simpler. He claims that no professional specialty today knows how to deal effectively with the connections between trade, investment, goods, and military security; and none deals with links between domestic and foreign affairs. No one in government, writes Bloomfield, can deal with these connections if he is stuck into an agency or subject that pretends the nonrelevant ends of the connection are none of his business.

As for the unknowable future--that life that happens to you while you are making other plans--it's also no excuse not to try to plan. "Econometric analysis is not always right. But it predicts better than either Adam Smith or Karl Marx was able to." Indeed, any study that questions the premises of policy by going beyond the "hunch and guess routine" may not predict the future, but it might forestall more Bays of Pigs.

Bloomfield concludes that these things need to be done, and done well: study the unfolding future--short, middle, and long-term--"free of agency bias," using available analytical tools in addition to "seat-of-pants" thinking; and encourage independence of mind, so that bearers of bad news don't

end up with their heads under their arms. He despairs of reaching any ideal in planning within government (or within any bureaucracy) and says that one aid to doing it better is to bring in outside critics. Unfortunately, Bloomfield doesn't explain how to keep those outsiders from falling into the trap of becoming one of the choir.

The implications for the Army of all this seem to be the confirmation that the Army needs to continue to build its resources for dealing with the future--a future defined as something beyond today's crises, to be dealt with by something different than today's resources.

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This Periodic Report of the Futures/Long-Range Planning Group of the Strategic Studies Institute contains items addressing the long-range future and their implications for the US Army. Specific subjects considered are: Antarctica, America's aging population, divided societies, American-English, ethnotronics, and long-range planning. An introductory page presents notes prepared by the Chairman, Futures/Long-Range Planning Group.

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